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David L. Fehrman
Morrison & Foerster LLP
35th Floor
555 W. 5th Street
Los Angeles, CA 90013

| EXAMINER | |
|---|---|
| GUPTA, PARUL H | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/626,141 | OSAKABE, KATSUICHI | |
| | Examiner | Art Unit | |
| | Parul Gupta | 2627 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *7/24/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

1. Claims 1-18 are pending for examination as interpreted by the examiner. The IDS filed on 10/3/05 and 5/30/06 was considered.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 17 and 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 17 and 18 are drawn to a "**program**" *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as

they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 4, 8, 9, 11, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al., US Patent 5,367,514 in view of Sasa et al., US Patent 7,061,847.

Regarding claim 1, Kobayashi et al. teaches an optical disk recording apparatus for forming pits ("recording marks") on a recording surface of an optical disk of a given type at a given recording speed by applying a laser light in the form of a sequence of multiple pulses obtained by intermittently turning on and off the laser light according to a given multi-pulse pattern (explained in abstract), the apparatus comprising: a write strategy circuit that is set with a pattern table ("pattern memory" of element 49 of figure 25) and controls the turning on and off of the laser light according to a multi-pulse pattern selected from the pattern table in correspondence to a length of the pit to be formed (done by "run length judgement circuit" of element 46 of figure 25); a storage section that stores a plurality of pattern tables of different kinds, each pattern table

containing a plurality of multi-pulse patterns corresponding to a plurality of lengths of the pit (function performed by "pattern memory" of element 49 of figure 25); and a control section that selects one of the pattern tables. Kobayashi et al. does not explicitly teach that choosing the pattern is based on the recording speed. Sasa et al. teaches an apparatus where the choosing the pattern is based on either one or both of the recording speed and the type of the optical disk, and that reads out the selected pattern table from the storage section and sets the read pattern table in the write strategy circuit (column 4, lines 39-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of including recording speed as a reason for choosing a given pattern as taught by Sasa et al. into the system of Kobayashi et al. This would serve to easily achieve the high-speed recording of a high-density optical storage medium at a high recording speed above the basic recording speed by setting the recording pulse pattern so as to match with the recording process (column 4, lines 32-38 of Sasa et al.).

Regarding claim 8, Kobayashi et al. teaches an optical disk recording apparatus for forming pits on a recording surface of an optical disk of a given type at a given recording speed by applying a laser light in the form of a sequence of multiple pulses obtained by intermittently turning on and off the laser light according to a given multi-pulse pattern while rotating the optical disk at a constant angular velocity such that a linear velocity of the optical disk varies (explained in abstract), the apparatus comprising: a write strategy circuit that is set with a pattern table ("pattern memory" of element 49 of figure 25) and controls the turning on and off of the laser light according

to a multi-pulse pattern selected from the pattern table in correspondence to a length of the pit to be formed (done by "run length judgement circuit" of element 46 of figure 25); a storage section that stores a plurality of pattern tables of different kinds, each pattern table containing a plurality of multi-pulse patterns corresponding to a plurality of lengths of the pit (function performed by "pattern memory" of element 49 of figure 25); and a control section that selects one of the pattern tables. Kobayashi et al. does not explicitly teach that choosing the pattern is based on the recording speed. Sasa et al. teaches an apparatus where the choosing the pattern is based on either one or both of the recording speed and the type of the optical disk and based on the varying linear velocity of the optical disk, and that reads out the selected pattern table from the storage section and sets the read pattern table in the write strategy circuit (column 4, lines 39-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of including recording speed as a reason for choosing a given pattern as taught by Sasa et al. into the system of Kobayashi et al. This would serve to easily achieve the high-speed recording of a high-density optical storage medium at a high recording speed above the basic recording speed by setting the recording pulse pattern so as to match with the recording process (column 4, lines 32-38 of Sasa et al.).

Regarding claim 15, Kobayashi et al. teaches a method of forming pits on a recording surface of an optical disk of a given type at a given recording speed by applying a laser light in the form of a sequence of multiple pulses obtained by intermittently turning on and off the laser light according to a given multi-pulse pattern (column 7, lines 18-38), the method comprising: a write strategy process settable with a

pattern table and capable of controlling the turning on and off of the laser light according to a multi-pulse pattern selected from the pattern table in correspondence to a length of the pit to be formed (column 10, lines 14-48); a storage process of storing a plurality of pattern tables of different kinds in a storage, each pattern table containing a plurality of multi-pulse patterns corresponding to a plurality of lengths of the pit (column 10, lines 7-10); and a control process of selecting one of the pattern tables (column 9, line 58-63). Kobayashi et al. does not explicitly teach that choosing the pattern is based on the recording speed. Sasa et al. teaches an apparatus where the choosing the pattern is based on either one or both of the recording speed and the type of the optical disk, and retrieving the selected pattern table from the storage and setting the read pattern table in the write strategy process (column 4, lines 39-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of including recording speed as a reason for choosing a given pattern as taught by Sasa et al. into the system of Kobayashi et al. This would serve to easily achieve the high-speed recording of a high-density optical storage medium at a high recording speed above the basic recording speed by setting the recording pulse pattern so as to match with the recording process (column 4, lines 32-38 of Sasa et al.).

Regarding claim 16, Kobayashi et al. teaches a method of forming pits on a recording surface of an optical disk of a given type at a given recording speed by applying a laser light in the form of a sequence of multiple pulses obtained by intermittently turning on and off the laser light according to a given multi-pulse pattern while rotating the optical disk at a constant angular velocity such that a linear velocity of

the optical disk varies relative to a spot of the laser light (column 7, lines 18-38), the method comprising: a write strategy process settable with a pattern table and capable of controlling the turning on and off of the laser light according to said liner velocity and a multi-pulse pattern selected from the pattern table in correspondence to a length of the pit to be formed (column 10, lines 14-48); a storage process of storing a plurality of pattern tables of different kinds in a storage, each pattern table containing a plurality of multi-pulse patterns corresponding to a plurality of lengths of the pit (column 10, lines 7-10); and a control process of selecting one of the pattern tables (column 9, line 58-63). Kobayashi et al. does not explicitly teach that choosing the pattern is based on the recording speed. Sasa et al. teaches an apparatus where the choosing the pattern is based on either one or both of the recording speed and the type of the optical disk and based on the varying linear velocity of the optical disk, and retrieving the selected pattern table from the storage and setting the read pattern table in the write strategy process (column 4, lines 39-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of including recording speed as a reason for choosing a given pattern as taught by Sasa et al. into the system of Kobayashi et al. This would serve to easily achieve the high-speed recording of a high-density optical storage medium at a high recording speed above the basic recording speed by setting the recording pulse pattern so as to match with the recording process (column 4, lines 32-38 of Sasa et al.).

Regarding claim 17, Kobayashi et al. teaches a program (inherent to method of claim 15) for use in an optical disk recording apparatus designed for forming pits on a

recording surface of an optical disk of a given type at a given recording speed by applying a laser light in the form of a sequence of multiple pulses obtained by intermittently turning on and off the laser light according to a given multi-pulse pattern (column 7, lines 18-38), the program being executable by the optical disk recording apparatus for performing a method comprising: a write strategy process settable with a pattern table and capable of controlling the turning on and off of the laser light according to a multi-pulse pattern selected from the pattern table in correspondence to a length of the pit to be formed (column 10, lines 14-48); a storage process of storing a plurality of pattern tables of different kinds in a storage, each pattern table containing a plurality of multi-pulse patterns corresponding to a plurality of lengths of the pit (column 10, lines 7-10); and a control process of selecting one of the pattern tables. (column 9, line 58-63). Kobayashi et al. does not explicitly teach that choosing the pattern is based on the recording speed. Sasa et al. teaches an apparatus where the choosing the pattern is based on either one or both of the recording speed and the type of the optical disk, and retrieving the selected pattern table from the storage and setting the read pattern table in the write strategy process (column 4, lines 39-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of including recording speed as a reason for choosing a given pattern as taught by Sasa et al. into the system of Kobayashi et al. This would serve to easily achieve the high-speed recording of a high-density optical storage medium at a high recording speed above the basic recording speed by setting the recording pulse pattern so as to match with the recording process (column 4, lines 32-38 of Sasa et al.).

Regarding claim 18, Kobayashi et al. teaches a program (inherent to method of claim 16) for use in an optical disk recording apparatus designed for forming pits on a recording surface of an optical disk of a given type at a given recording speed by applying a laser light in the form of a sequence of multiple pulses obtained by intermittently turning on and off the laser light according to a given multi-pulse pattern while rotating the optical disk at a constant angular velocity such that a linear velocity of the optical disk varies relative to a spot of the laser light (column 7, lines 18-38), the program being executable by the optical disk recording apparatus for performing a method comprising: a write strategy process settable with a pattern table and capable of controlling the turning on and off of the laser light according to a multi-pulse pattern selected from the pattern table in correspondence to a length of the pit to be formed (column 10, lines 14-48); a storage process of storing a plurality of pattern tables of different kinds in a storage, each pattern table containing a plurality of multi-pulse patterns corresponding to a plurality of lengths of the pit (column 10, lines 7-10); and a control process of selecting one of the pattern tables (column 9, line 58-63). Kobayashi et al. does not explicitly teach that choosing the pattern is based on the recording speed. Sasa et al. teaches an apparatus where the choosing the pattern is based on either one or both of the recording speed and the type of the optical disk and based on the varying linear velocity of the optical disk, and retrieving the selected pattern table from the storage and setting the read pattern table in the write strategy process (column 4, lines 39-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of including recording speed as a reason for

choosing a given pattern as taught by Sasa et al. into the system of Kobayashi et al. This would serve to easily achieve the high-speed recording of a high-density optical storage medium at a high recording speed above the basic recording speed by setting the recording pulse pattern so as to match with the recording process (column 4, lines 32-38 of Sasa et al.).

Regarding claim 2, Kobayashi et al. teaches the optical disk recording apparatus according to claim 1, wherein the storage section ("pattern memory") stores the plurality of the pattern tables in correspondence to a plurality of basic cycles of turning on and off the laser light, such that each pattern table contains the plurality of the multi-pulse patterns, all of which are arranged according to the basic cycle allotted to each pattern table and in matching with the plurality of the lengths of the pit (column 15, lines 26-38).

Regarding claim 9, Kobayashi et al. teaches the optical disk recording apparatus according to claim 8, wherein the storage section ("pattern memory") stores the plurality of the pattern tables in correspondence to pattern tables of a plurality of basic cycles of turning on and off the laser light, such that each pattern table contains the plurality of the multi-pulse patterns, all of which are arranged according to the basic cycle allotted to each pattern table and in matching with the plurality of the lengths of the pit (column 15, lines 26-38).

Regarding claim 4, Sasa et al. teaches the optical disk recording apparatus according to claim 1, wherein the control section periodically monitors a change in the

recording speed during recording, and selects the pattern table in response to the monitored change of the recording speed to thereby dynamically set the selected pattern table in the write strategy circuit (column 4, line 57-column5, line 7).

Regarding claim 11, Sasa et al. teaches the optical disk recording apparatus according to claim 8, wherein the control section periodically monitors a change in the recording speed during recording, and selects the pattern table in response to the monitored change of the recording speed to thereby dynamically set the selected pattern table in the write strategy circuit (column 4, line 57-column5, line 7).

4. Claims 6, 7, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Sasa et al. in view of Hara, US Patent 6,044,055.

Kobayashi et al. in view of Sasa et al. teaches the limitations of the given write methods of claims 1 and 8 as well as a laser that ranges from a 1.5T cycle through 4T cycle (figure 19 of Kobayashi et al.). However, there is no mention of a light ranging from a 0.5T cycle through 1.5 cycle.

Regarding claim 6, Hara teaches the optical disk recording apparatus, wherein the storage section stores the multi-pulse patterns that have cycles of turning on and off the laser light ranging from 0.5T cycle through 3T cycle (figure 6).

Regarding claim 13, Hara teaches the optical disk recording apparatus, wherein the storage section stores the multi-pulse patterns that have cycles of turning on and off the laser light ranging from 0.5T cycle through 3T cycle (figure 6).

Regarding claim 7, Koyabashi et al. teaches the optical disk recording apparatus, wherein the control section performs different sessions of test recording (column 13, lines 47-59 and column 14, lines 52-64) separately from each other with using the respective multi-pulse patterns having the cycles ranging from 0.5T through 3T to evaluate respective qualities of the different sessions of the test recording before an actual recording, and selects one of the multi-pulse patterns having the cycles ranging from 0.5T through 3T based on the respective qualities evaluated by the different sessions of the test recording. Koyabashi et al. does not teach the exact range. However, Hara teaches the given range in figure 6.

Regarding claim 14, Koyabashi et al. teaches the optical disk recording apparatus, wherein the control section performs different sessions of test recording (column 13, lines 47-59 and column 14, lines 52-64) separately from each other with using the respective multi-pulse patterns having the cycles ranging from 0.5T through 3T to evaluate respective qualities of the different sessions of the test recording before an actual recording, and selects one of the multi-pulse patterns having the cycles ranging from 0.5T through 3T based on the respective qualities evaluated by the different sessions of the test recording. Koyabashi et al. does not teach the exact range. However, Hara teaches the given range in figure 6.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the broader range as taught by Hara into the system of Kobayashi et al. in view of Sasa et al. This would serve the purpose of allowing recording compensation to be performed easily in accordance with the linear velocity (column 5, lines 8-11 of Hara).

5. Claims 3, 5, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Sasa et al. in view of Narumi et al., US Patent 2004/0052176.

Regarding claim 3, Kobayashi et al. teaches the optical disk recording apparatus, wherein the storage section (element 49 of figure 25) stores a 1T pattern table corresponding to a pattern table of the basic cycle of 1T, so that the 1T pattern table enables the write strategy circuit to control the turning on and off of the laser light according to the multi-pulse patterns of the basic cycle of 1T, and stores a 2T pattern table corresponding to a pattern table of the basic cycle of 2T, so that the 2T pattern table enables the write strategy circuit to control the turning on and off of the laser light according to the multi-pulse patterns of the basic cycle of 2T (done by element 13 of figure 10).

Regarding claim 10, Kobayashi et al. teaches the optical disk recording apparatus, according to claim 9, wherein the storage section (element 49 of figure 25) stores a 1T pattern table corresponding to a pattern table of the basic cycle of 1T, so

that the 1T pattern table enables the write strategy circuit to control the turning on and off of the laser light according to the basic cycle of 1T, and stores a 2T pattern table corresponding to a pattern table of the basic cycle of 2T, so that the 2T pattern table enables the write strategy circuit to control the turning on and off of the laser light according to the basic cycle of 2T (done by element 13 of figure 10).

Regarding claim 5, Kobayashi et al. teaches the optical disk recording apparatus, wherein the control section performs a first test recording with using the 1T pattern table to evaluate a quality of recording and a second test recording with using the 2T pattern table to evaluate a quality of recording separately from the first test recording before performing an actual recording, and selects one of the 1T pattern table and the 2T pattern table based on the respective qualities evaluated by the first test recording and the second test recording (concept of test recording is taught in column 13, lines 47-59 and column 14, lines 52-64).

Regarding claim 12, Kobayashi et al. teaches the optical disk recording apparatus, wherein the control section performs a first test recording with using the 1T pattern table to evaluate a quality of recording and a second test recording with using the 2T pattern table to evaluate a quality of recording separately from the first test recording before performing an actual recording, and selects one of the 1T pattern table and the 2T pattern table based on the respective qualities evaluated by the first test recording and the second test recording (concept of test recording is taught in column 13, lines 47-59 and column 14, lines 52-64).

Kobayashi et al. does not explicitly teach the 1T and 2T pattern tables, but rather, different pattern tables that are not specified. In paragraphs 0023 and 0024, Narumi et al. teaches the separation of 1T and 2T cycles for various purposes.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of separating 1T and 2T cycles as taught by Narumi et al. into the system of Kobayashi et al. in view of Sasa et al. This would serve the purpose of reducing problems even in the case of high recording linear velocity (paragraph 0024 of Narumi et al.).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PHG
6/23/06

THANG V. TRAN
PRIMARY EXAMINER